

Statement of
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Committee on Science
Subcommittee on Environment, Technology, and Standards

**“Health Care Information Technology: What are the Opportunities
for and Barriers to Interoperable Information Technology Systems?”**

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Introduction:

Good afternoon, Mr. Chairman and members of the subcommittee. My name is Homer Chin. I am the Medical Director for Clinical Information Systems for the Kaiser Permanente Northwest Region, which is one of eight Kaiser Permanente Regions that together make up the Kaiser Permanente Program.

Kaiser Permanente is the nation's largest nonprofit health plan. Over 140,000 employees and 11,000 physicians serve 8.4 million members in over 30 hospitals and 430 medical office buildings.

Kaiser Permanente is actually made up of two separate but closely aligned entities: Kaiser Foundation Health Plan and Hospitals which is responsible for administering the prepaid insurance and for running much of day-to-day operations, and The Permanente Medical Groups who are responsible for the delivery of professional medical services.

What distinguishes Kaiser Permanente from most other health care organizations is:

1. Integrated comprehensive health care where primary care, specialty care, inpatient outpatient and ancillary services are delivered under one umbrella, and
2. Prepaid health insurance—which encourages us to keep our members healthy, prevent disease, and improve the effectiveness and efficiency of our care delivery system.

These two aspects of Kaiser Permanente—comprehensive integrated care and prepaid health insurance—provide both the structure and incentive for us to fully leverage information technology in our delivery of health care services.

Kaiser Permanente Northwest and Health Care Information Technology:

Although some of my comments today are about the Kaiser Permanente Program as a whole, many of the more specific examples and comments relate specifically to our experience here in the Kaiser Permanente Northwest Region.

In 1994, KPNW embarked on the implementation of a single integrated EMR for all members of this region. This system is not only an electronic version of the outpatient medical record, it also automates all information transmission processes in the outpatient setting. Physicians use this system to document, prescribe, order, refer, and to message other healthcare providers. By 1998, we had completed our implementation of an entirely electronic medical record throughout our region, and from that point forward we no longer created a paper medical record for members that joined our program. In 1999, we created an internet portal for members to provide them with a wealth of health information along with the ability to request appointments and refill their medications online. In 2002, we provided patients direct access, through a secure internet connection, to parts of their medical record along with the ability for them to directly electronically

message their physicians. That system, KP HealthConnect Online, is now being used by over 100,000 members in this region--roughly 20% of our membership.

Over the years we have studied and published results of the many benefits of having an integrated electronic medical record. Benefits can be general classified into:

1. Integrated and Comprehensive Lifetime Clinical Record. All medical information from all sources is accessible electronically in an integrated system.
2. Multiple users in multiple locations can simultaneously access the chart.
3. Time and location independent interaction between providers, and between providers and patients.
4. Embedding of best practices and guidelines into the processes of care.
5. Embedding alerts and reminders into the care process.
6. Identifying patients for specific interventions, such as identifying all patients that were given Phen-Fen weight loss treatment, and requesting that they come in for a screening cardiac ultrasound.
7. Ability to carry out systematic population care strategies, such as notifying all patients who are overdue for screening mammography, or identifying all patients with diabetes that need more aggressive treatment of their cholesterol.
8. Improved new modalities of care, such as self-service appointing and electronic methods of communication.
9. Databases that can effectively monitor and improve overall organizational performance.

In 2003, The Kaiser Permanente Program embarked on the implementation of an integrated health care information system called KP HealthConnect, at an estimated cost of over \$3 Billion over ten years. This system is envisioned to be a comprehensive integrated system covering practice and hospital management, inpatient and outpatient electronic medical records, datawarehousing, healthplan administration, and patient self-service and communication systems. All eight Kaiser Permanente Regions have already implemented significant portions of this system.

Incentives and Barriers to the Adoption of Information Technology in Health Care:

There are three significant barriers to the adoption of IT in Health Care.

One of the main barriers to the adoption of information technology in health care is the lack of incentives for organizations to be efficient and effective at producing the product "health". Organizations may be effective at producing office visits, radiology tests, operations, prescriptions, but they are not incented to produce "health", and are certainly not incented to work with other organizations that they compete with to reduce the overall cost of health care.

A second significant barrier to IT adoption is the relative immaturity of the field of healthcare IT. There are few well trodden paths that organizations can follow to get from here to there in the implementation of electronic medical record systems.

A third significant barrier is the inherent complex, subjective, and changing nature of healthcare. Unlike other industries that are relatively more static or certain, medical knowledge, practice, regulation, and technology are constantly changing. The implementation of an Electronic Medical Records is not like installing a refrigerator, where you buy it, plug it in, and derive the benefits. The implementation of an EMR is currently still more of an art than a science. A good implementation will improve the efficiency of a functional process, but a bad implementation may fail, have unintended negative consequences, or worsen existing processes. Because medicine is inherently uncertain, changing, and not well defined, a good implementation of IT in healthcare requires a certain skill-set and the right conditions. Although there are many instances of health care IT systems that have been successfully implemented with significant benefit, there are also many instances of implementations that failed or resulted in little or no benefit.

Reasons for Successful Health Care IT Implementation at Kaiser Permanente Northwest:

KPNW was successful because it had:

1. Aligned incentives to maximize effectiveness and efficiency in maintaining health.
2. One unique patient identifier (the insurance number is also the health record number), allowing for the easy aggregation of information across systems.
3. Minimal issues with terminology or data standards. In most cases, KPNW had a single instance of most systems—for example, a single Pharmacy System, Radiology System, Lab System, etc. The terminology that the particular single system used became the defacto standard for the enterprise. There was no need to impose a terminology or data standard or translate data between the various systems.
4. An integrated implementation team partnering physicians, project management staff, and IT professionals.

Implications for other healthcare systems:

There must be incentives for health care organizations to share information. KPNW has contracts with several non-KP hospitals in the community where we hospitalize our patients. All transcribed information on our patients in those facilities is electronically sent to us and integrated with other information in our Electronic Medical Record. The incentive for organizations to send us this information is clear – it is a requirement for us to do business with them.

A minimum requirement to support the interchange of health care information between entities is to be able to identify specific individuals between health care entities. This implies either a unique patient identifier, or demographic standards that will allow the identification of the same individual between health care entities with reasonable certainty.

The optimal level of information standardization, beyond that minimum requirement of patient identification, is unclear. At one end of the spectrum, scanned images of the paper record could be electronically transferred from one health care entity to another. That would require minimal changes in each system but would not allow for any significant integration of data between the two entities. At the other end of the spectrum, a very rigid and detailed standard at a very atomic level could be defined that would allow for complete integration of information between entities, but would require significant work in each organization, and would require significant on-going maintenance and organizational adaptation.

Such a rigid detailed atomic standard for all data in medical care is unlikely to be successful because of the changing nature and variation in the practice of medicine between locations and over time, and the enormous cost involved in migrating existing systems and terminologies into a rigid standard and the cost required to adapt to ongoing changes. Because of the inherent uncertainty and subjective “fuzzy” judgment involved in healthcare, requiring adherence to a rigid detailed standard in all areas may also introduce more problems than it will solve.

On the other hand, imposition of higher level standards will greatly increase the ability to integrate information between health care entities at a relatively low cost. For instance, the requirement to date stamp and label pieces of information into broad categories such as: Lab Result, Radiology Report, Progress Note, Medication, etc., would allow the merging of the information between institutions into separate electronic “tabs” and display that information in chronologic order.

Within each area of medical data, there are varying levels of cost and benefit to the various levels of standardization, so the optimum level of standardization will vary depending on the specific area and situation.

Summary:

In summary, the key to improving information sharing between entities is to provide incentives for organizations to share that information.

At a minimum, a mechanism to identify specific individuals between entities is needed. Beyond that, minimal further standard specification will allow the merging of clinical information between entities in a useful way at minimal cost.

Thank you for allowing me to testify today. I would be happy to answer any questions.

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